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"Method for setting broadcast receivers"
(Menetelmä lähetyksen vastaanottolaitteen asettamiseksi)

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A method for setting broadcast receivers

Background of the invention

The invention relates to methods and equipment for setting broadcast receivers.

Mobile telephones are now coming equipped with broadcast receivers such as a FM receiver chip to allow the user to listen to FM radio broadcasts when not using the telephone for voice calls. These mobile telephones are also often equipped with a internet connection device such as data modem to be used for internet access, and with hypertext retrieval protocols such as WAP (Wireless Application Protocol), HTTP (HyperText Transfer Protocol), and a browser capable of decoding, presenting, and navigating hypertext such as HTML (HyperText Markup Language) or WML (Wireless Markup Language) or similar.

Many broadcast stations such as radio stations have started to offer Program Associated Data (PAD) correspond with program offered using primary broadcast channel BC. The browser can retrieve this kind of information from Internet sites. A Uniform Resource Locator (URL) identifies a site. The URL's are typically stored as bookmarks in the device.

Existing mobile phone / FM receiver combinations rely on the user finding a station, then saving and labelling the frequency. On some older telephones, the radio is an add-on option, and the frequency selector is not integrated with the telephone system at all.

When using a analogical AM/FM sending, it is desirable to choose the best frequency for that particular broadcast available in that area. Radio stations use different frequency for the same broadcast in different locations and so it might be possible to store the frequency, but problems arise when you move to a different location where are different radio stations and different frequencies than which are stored.

Disclosure of the invention

An object of the invention is to offer a simple to use solution for connecting a primary broadcast received by user's broadcast receiver at primary broadcast channel with uniform resource locator (URL) where correspond program associated data (PAD) is offered or vice versa wherein the user is connected with URL providing a program associated data with

information at primary broadcast channel BC associated with user's broadcast receiver. This object is achieved by a method and equipment having the characteristics defined in the independent claims. Preferred embodiments of the invention are disclosed in the attached dependent claims.

One of the objects of the invention is to associate the frequency of the broadcast receiver unit for example FM receiver chip with an URL containing Program Associated Data (PAD). Program Associated Data (PAD) is offered using Station Associated Data (SAD) site by simply browsing a station associated data site (SADS).

Station Associated Data (SAD) is retrieved using an interaction channel. Retrieving is done by request sent a browser utilizing Internet protocol (IP) connection to retrieve hypertext. The hypertext used by the browser is for example HTML or WML. The protocol used for retrieving hypertext request used by Internet connection device such as data modem is for example hypertext transfer protocol (HTTP) request or wireless application protocol (WAP) request. The interaction channel comprises return interaction path and forward interaction path and this allows the retrieving station associated data information.

The connection could also be a dialing connection or interaction channel can be replaced with short message (SMS) arrangement. When using short message (SMS) the broadcast receiver has to have means for identifying Station Associated Data (SAD) information included in short message (SMS) and setting the broadcast receiver.

Broadcast station sends primary broadcast using primary broadcast channel wherein primary broadcast channel having a certain frequency or channel signature.

Station associated data site (SADS) contains a listing of different station associated data (SAD). Station associated data site (SADS) comprise a complete SAD listing. One Station Associated Data (SAD) is an information package about program channel including information such as uniform resource locator (URL) for associated program associated data (PAD). Position information describing the coverage area of broadcast station is also included in Station Associated Data (SAD). SAD should also include other information about program associated data (PAD) such frequency information, possible channel signature and frequency coding type.

The listing being dependent on the position and/or the indicated frequency and/or the channel signatures and the user of broadcast receiver thus being capable of selecting from this listing and with utilizing an utility control interface set the integrated broadcast receiver unit such as radio chip and the browser using a single selection or click. For example YLE in Finland has radio stations and those radio stations have many different PAD sites and it is possible for YLE having one or more common SAD site (SADS).

To receive the correct SAD listing there are things that effect on SAD listing and should include to the request. The request sent by the browser to station associated data site (SADS) comprises precognition about broadcast receiver. The first device should tell the device type which can receive primary broadcast. The device unit or chip can be AM, FM, RDS, digital radio, television or any other device capable of receiving primary broadcast.

The request should also include the position information describing the situation of the device. Position can be determined using mobile network or GPS device integrated in the broadcast receiver. The position information can be proximate so the cell based positioning is adequate in most cases and the device can determine it own position. Moreover the listing can include currently used information such as frequency or channel signatures of the broadcast receiver. If the identity of the user is possible to determine, for example the international mobile subscriber identity (IMSI), then identity information should also include optionally in the request. Other things like currently used menu language can effect to list filtering. Also if the situation of the user, for example sport event or concert, is possible to determine it could be included in request.

The request can be regenerated when needed with a trigger arranged in broadcast receiver. The trigger can be arranged for example in broadcast receiver unit monitoring the primary broadcast level or in utility control monitoring the position of the broadcast receiver. Regenerating request is needed for example when the position of the broadcast receiver is changed and the quality is primary broadcast is decreased. In most cases it is preferred that regenerating approved by the user before it is executed.

A simple single user selection or click on an uniform resource locator URL link in station associated data (SAD) or in bookmark stored in broadcast receiver sets both the broadcast receiver unit to receive the correct frequency according to given perquisite information such as positioning and forwards the browser to the associated broadcast station site with using station

associated data site (SADS) where containing program associated data PAD is presented time-synchronized with primary broadcast for enjoyment.

Brief description of the drawing

The invention will be described in more detail by means of preferred embodiments with reference to the appended drawings wherein:

Figure 1 illustrates the concept of setting broadcast receiver integrated mobile phone using two different channels, interaction channel and primary broadcast channel.

Figure 2 is flow chart illustrating a method for setting a broadcast receiver in a concept as shown in Figure 1;

Figure 3 is flow chart illustrating a method for posting request to Station Associated Data Site (SADS) and retrieving Station associated Data (SAD) with using an Internet connection;

Figure 4 is flow chart illustrating the processing of a received request in Station Associated Data Site (SADS);

Figure 5 is flow chart illustrating a method for setting the broadcast receivers frequency and browser settings based on saved bookmarks;

Figure 6 is flow chart illustrating a combined selection of broadcast receiver and browser Uniform Resource Locator (URL).

Detailed description of the invention

Figures 1-6 illustrates the concept of setting broadcast receiver (200) integrated mobile phone (200a) using two different channels, interaction channel and primary broadcast channel. In Figure 1 by connecting the browser (203) to the broadcast receiver unit (207) such as radio chip it is possible for the browser to perform controlling functions such as tuning the broadcast receiver unit to a frequency according to information retrieved from the Internet (100) using the interaction channel (117). Therefore it would be possible for a web site to contain Station Associated Data SAD (103) such as the frequency information and other control data used for setting the broadcast receiver unit (207) for broadcast stations. This frequency information and other station associated data SAD (103) is retrieved by the browser from the SAD site

(SADS) (101) and then applied to the broadcast receiver unit (207) through the execution environment (205) and the utility control interface (206).

If the utility control interface (206) is a standard web server, implementing at least parts of the HTTP protocol like the GET and HEAD functions, the execution environment is not needed. In this case the browser is capable of using the utility control interface (206) as a local web server and the control data needed to set the frequency of the broadcast receiver unit such as radio chip would simply be an URL link where the frequency information and other SAD data are carried as parameters. One of the connections between the browser (203), execution environment (205), utility control (206) and broadcast receiver unit (207) is a short range radio connection such as bluetooth connection. The connection can also be a cable connection or infrared connection. This allows separate devices.

In addition to containing SAD such as the receiver frequency, the station associated data site SADS (101) can also within the same data contain a forwarding URL link to a radio station web site (102) where program associated data (PAD) (104) for that frequency broadcast is being presented.

After tuning the broadcast receiver unit (207) the browser is forwarded either by the execution environment (205) or the utility control interface (206) to the broadcast station site (102) and the browser retrieves markup language which is PAD data presented on that site (102).

Examples of Program Associated Data (PAD) are what song and artist is currently playing, DJ e-mail contact forms, local entertainment events, and local news, and weather etc. Station call-in-telephone-numbers could be linked to the mobile phone via so called WTAI-links (Wireless Telephony Application Interface) that execute functions built into WAP phones when you select the WTAI-link in the browser, such as automatically dialling the phone for a voice call. This broadcast station phone number information can be considered either SAD or PAD.

Since the entire SAD (103) for a certain broadcast station can be a single URL link the SAD site (101) is simply containing a collection of links that are retrieved to the display (202) by the browser (203) as choices for the end user. When the end user makes a selection the browser sends an HTTP retrieval command such as GET to the utility control (206). This command includes SAD such as the forwarding URL link to the broadcast station web site (102) as well as the frequency that the broadcast receiver unit (207) is set

to receive on in the primary broadcast channel (109). After setting the broadcast receiver unit frequency the browser is then forwarded by the utility control (206) to the broadcast station web site (102). At that site PAD is presented in a hypertext format such as HTML or WML. Thus as a result of choosing a certain broadcast station link on the SAD site the broadcast receiver unit starts playing the frequency of the station and the browser shows PAD retrieved from that same station, all with a single selection.

In order for the SAD site (101) to return the correct SAD for the broadcast receiver unit (207) such as the frequency and the URL link to where the browser should retrieve PAD the SAD site can use the position knowledge of the broadcast receiver (200) integrated mobile phone (200a). The SAD site service can achieve this position knowledge by sending a request to the mobile network including the identifier for the mobile phone, or it can have received the position in the initial HTTP request from the mobile phone. The latter is possible if the mobile phone can position itself either using the mobile network or by an integrated GPS device in the mobile phone (200a). Therefore it is possible for broadcast stations such as radio stations that broadcast in different frequencies in different positions to get the broadcast receiver unit set with the correct frequency for that position.

Further, in order for the SAD site (101) to return the correct SAD for the broadcast receiver unit (207) the SAD site can use partial SAD data such as a channel signature and/or a selected frequency, which can be sent from the broadcast receiver in the initial HTTP request to the SAD site. This channel identifier could have been extracted from the broadcast receiver unit (207) in the following way. The URL link to the SAD site is not referring directly to the SAD site, instead the SAD site is only a parameter in a URL link referring to the local utility control (206) web server interface. The utility control (206) receives the HTTP GET command and reads the actually chosen SAD such as frequency, channel signatures, and possibly associated PAD URL link from the broadcast receiver unit (207). The browser (203) is instructed to proceed (forward) to the SAD site and the partial SAD data that were retrieved from the broadcast receiver unit are sent as HTTP parameters in the forward.

Further, the SAD site can also return a listing of SAD, where each list item SAD is a link which if selected sets the broadcast receiver unit to a certain station using either broadcast receiver unit frequency or station

signature or both. At the same time the browser is directed to the associated PAD site (102).

Further, the SAD site listing can be based on that the user selects the type of program he is interested in, rock, contemporary, jazz, etc. The listing returned from the SAD site can be categorized according to these kind of user choices.

Finally the SAD for a particular radio station should be stored conveniently together in the execution environment (205), or in the utility control (206), or in the broadcast receiver unit (207) as a bookmark. When the user selects a broadcast station the associate URL to the PAD site (102) is suggested to the browser (203). If the URL linking to the PAD site (102) is selected in the browser the user can be prompted to set the frequency according to the SAD data stored in the bookmark.

Although the invention has been described in the context of preferred embodiment and applications, it is not limited to these examples but it may vary within the scope of the appended claims.

Claims

1. A method for setting broadcast receiver (200), comprising receiving a primary broadcast sent by a broadcast station and retrieving program associated data (104) made available by said broadcast station, comprising:

-a primary broadcast channel (109) for receiving primary broadcast sent by broadcast station such as radio station (108);

-an interaction channel (117) for retrieving program associated data (PAD) (104) from broadcast station (102), whereby a browser (203) sends a request using an internet connection (204), characterized in that;

program associated data (PAD) using interaction channel (117) is retrieved from station associated data site (SADS) (101) as station associated data (SAD) (103) wherein the station associated data (SAD) is comprising said primary broadcast relating program associated data (PAD) made available on the web as referenced uniform resource locator (URL) of said program associated data (PAD) and/or frequency information and/or coverage area information regarding to included broadcast stations.

2. A method according to claim 1, characterized in that the request sent by the browser to station associated data site (SADS) (101) comprises precognition about broadcast receiver and/or it's position information wherein the precognition about broadcast receiver comprises the device type of the broadcast receiver and/or indicated frequency and/or channel signatures of the broadcast receiver.

3. A method according to claim 1 or 2, characterized in that the request sent by the browser to station associated data site (SADS) (101) is arranged to regenerate with a trigger arranged in broadcast receiver and/or with user's action.

4. A method according to claim 1, characterized in the that request sent by the browser to station associated data site (SADS) comprises a local URL link selected on the browser and the broadcast receiver unit settings connected together with the mobile position and sent to a station associated data site (SADS) and the response to said request from the SADS being a preformed SAD listing, the listing being dependent of the position and/or the indicated frequency and/or channel signatures and the user of broadcast receiver thus being capable of selecting from this listing and with

utilizing an utility control interface set the integrated broadcast receiver unit and the browser using a single selection.

5. A broadcast receiver, comprising;

a broadcast receiver unit (207) capable of receiving primary broadcast using primary broadcast channel (109) and;

an Internet connection device (204) using interaction channel (117) for internet access and with hypertext retrieval protocol;

a browser (203) using said internet connection device (204) for processing hypertext on a display (202) of said broadcast receiver whereby processing hypertext comprising functions such as retrieving, decoding, presenting and navigating hypertext,

characterized by that said broadcast receiver is comprising an utility control interface (206) where the said internet connected browser is arranged to read broadcast station settings from station associated data (SAD) (103) and use said station associated data (SAD) to control the broadcast receiver unit associating Program Associated Data (PAD) (104) retrieved by internet connection device and presented by the browser with primary broadcast available for broadcast receiver unit using primary broadcast channel (109);

6. A broadcast receiver according to claim 5, characterized in that the broadcast receiver unit is a radio unit.

7. A broadcast receiver according to claim 5, characterized in that the broadcast receiver unit is a television receiver unit.

8. A broadcast receiver according to claim 5-7, characterized in that the internet browser is arranged to retrieve program associated data (PAD) from a site indicated by a frequency selection in the broadcast receiver unit.

9. A broadcast receiver according to claim 5, characterized in that the internet browser is arranged to retrieve program associated data (PAD) from a station associated data site (SADS) indicated by a position (210) of the broadcast receiver.

10. A broadcast receiver according to claim 9, characterized in that the position of the broadcast receiver is arranged to determine using mobile network.

11. A broadcast receiver according to claim 9, characterized in that the position of the broadcast receiver is arranged to determine using GPS device integrated in the broadcast receiver.

12. A broadcast receiver according to claim 5, characterized in that combined selection of the controlling the settings of the broadcast receiver unit and the URL for the browser for retrieving the Program associated data (PAD) can be done with one single selection on an URL link on a SAD site.

13. A broadcast receiver according to claim 12, characterized in that the selection of the URL for the browser for retrieving the Program associated data (PAD) (104) can be done with a bookmark stored in browser (203).

14. A broadcast receiver according to claim 5, characterized in that the one of the intermediate connection (110-113) between the browser (203) and broadcast receiver unit is a short range radio connection.

15. A broadcast receiver according to claim 14, characterized in that the short range radio connection is a bluetooth connection.

16. A broadcast receiver according to claim 5, characterized in that the one of the intermediate connection (110-113) between the browser (203) and broadcast receiver unit is a cable connection.

17. A broadcast receiver according to claim 5, characterized in that the one of the intermediate connection (110-113) between the browser (203) and broadcast receiver unit is a infrared connection.

18. A web server, station associated data site (SADS) (101) for offering program associated data (PAD) (104) for a browser (203) using a internet connection device (204) for retrieving hypertext characterized by:

a database managing means for maintaining station associated data (SAD) whereby station associated data (SAD) is comprising said primary broadcast relating program associated data (PAD) made available on the web as referenced uniform resource locator (URL) of said program associated data (PAD) and/or frequency information and/or coverage area information regarding of included broadcast stations

a first software routine for receiving a request sent by the browser whereby said request comprising a position information of broadcast receiver

and/or frequency information selected in broadcast receiver unit and/or browser current URL information.

a second software routine comparing request sent by the browser and the server database

a third software routine for filtering the compared information

a fourth software routine for presenting the listing of filtered station associated data (SAD) compatible to device type given in browsers request.

19. A web server according to claim 18, characterized by database managing means for arranging several broadcast stations and/or broadcast stations programs into categories and means for searching the broadcast stations and/or broadcast stations programs based on said categories.

(57) Abstract

A method for setting broadcast receiver, comprising receiving a primary broadcast sent by broadcast station and retrieving program associated data made available by said broadcast station. The method comprises a first channel, primary broadcast channel BC 109 for receiving primary broadcast sent by broadcast station such as radio station 108 and a second channel, interaction channel 117 for retrieving program associated data (PAD) from broadcast station 102, whereby a browser 203 sends a HTTP or WAP request using an internet connection. The method comprising retrieving program associated data (PAD) using interaction channel is retrieved from station associated data site (SADS) as station associated data (SAD) wherein the station associated data is comprising said primary broadcast relating program associated data, coverage information and frequency information of included broadcast stations.

(Figure 1)

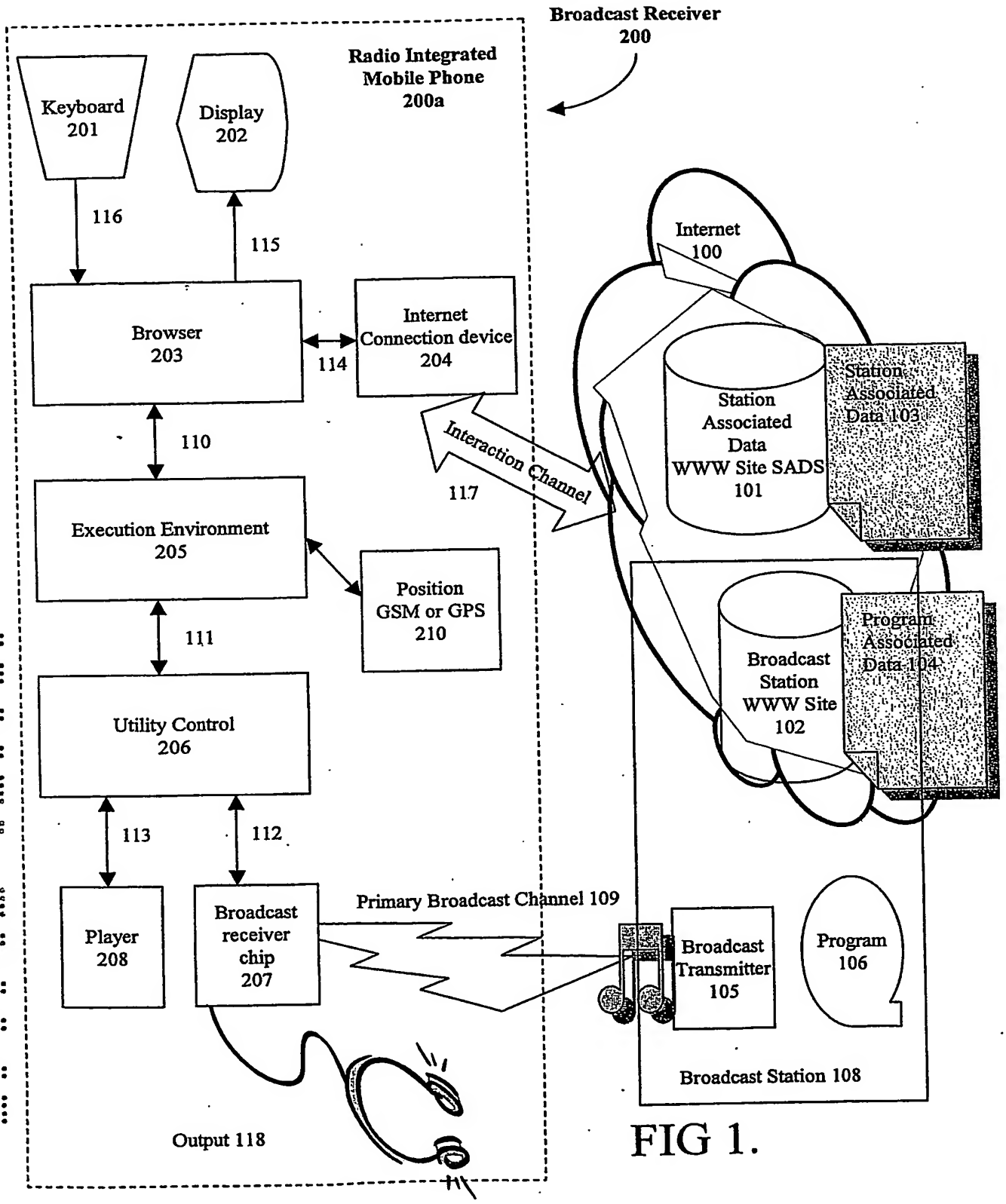

FIG 1.

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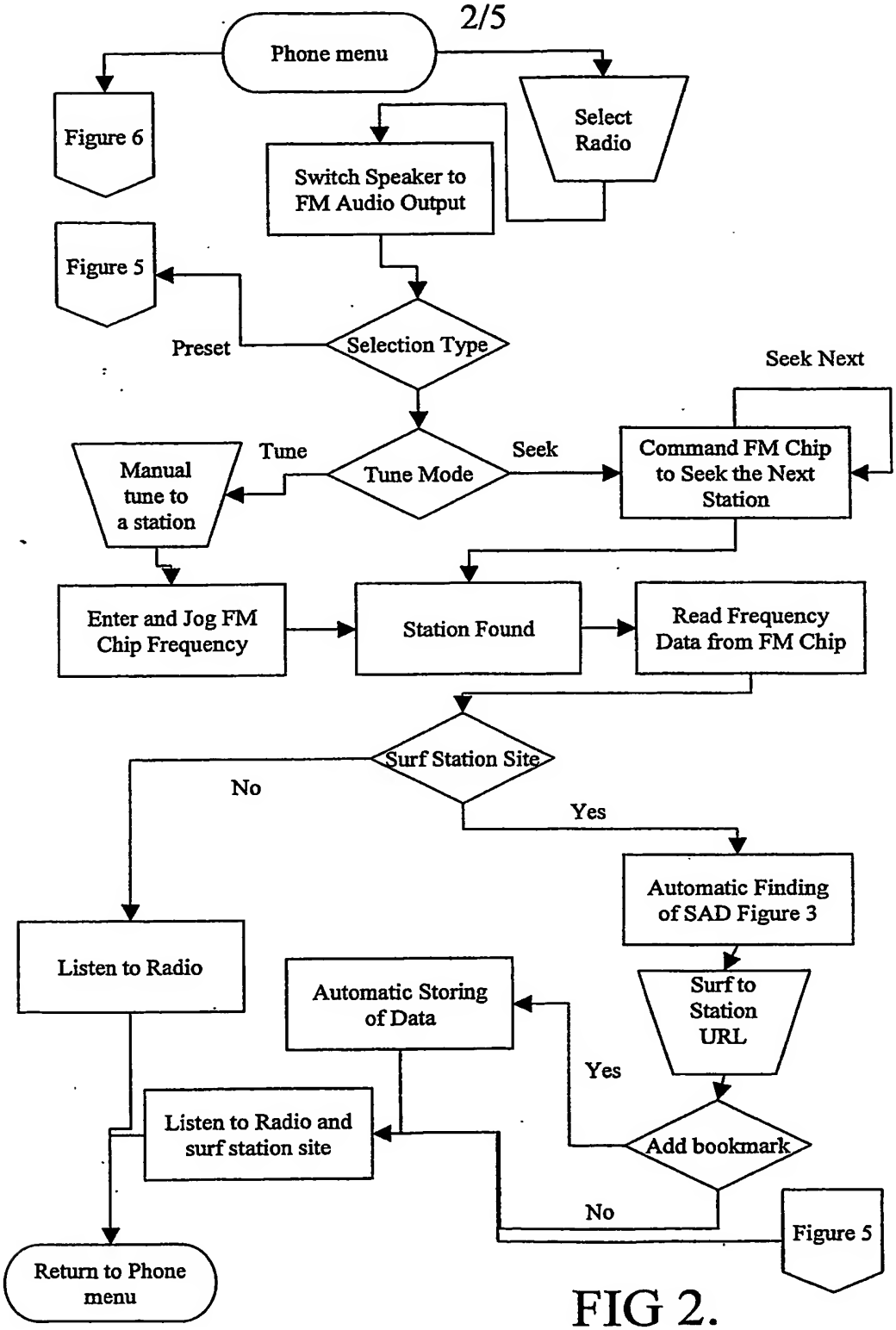
Phone menu
Figure 6
Select Radio
Switch Speaker to FM Audio Output
Figure 5
Preset
Selection Type
Seek Next
Tune
Seek
Manual tune to a station
Tune Mode
Command FM Chip to Seek the Next Station
Enter and Jog FM Chip Frequency
Station Found
Read Frequency Data from FM Chip
Surf Station Site
No
Yes
Automatic Finding of SAD Figure 3
Listen to Radio
Automatic Storing of Data
Surf to Station URL
Yes
Listen to Radio and surf station site
Add bookmark
No
Figure 5
Return to Phone menu

FIG 2.

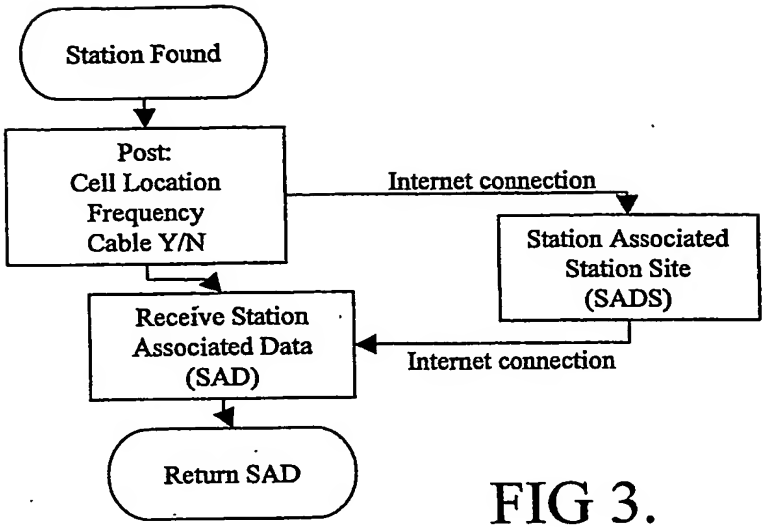
Station Found
Post:
Cell Location
Frequency
Cable Y/N
Internet connection
Station Associated
Station Site
(SADS)
Receive Station
Associated Data
(SAD)
Internet connection
Return SAD

FIG 3.

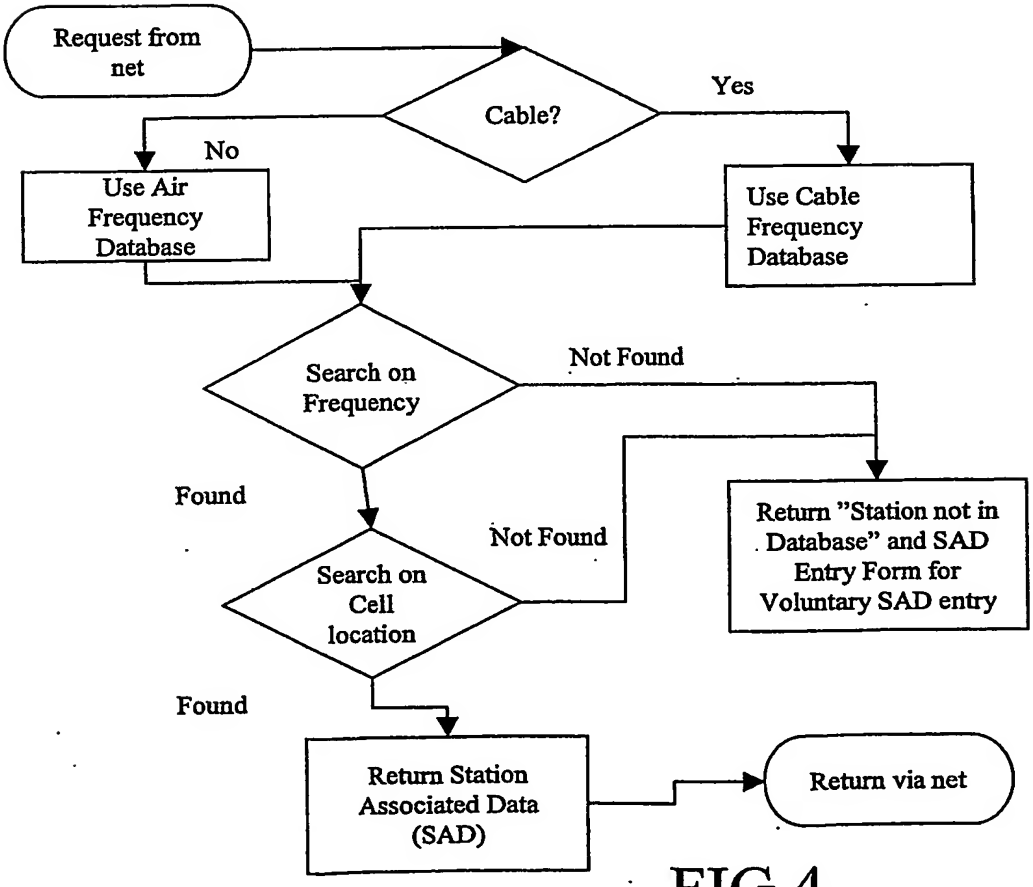
Request from
net
Cable?
Yes
No
Use Air
Frequency
Database
Use Cable
Frequency
Database
Search on
Frequency
Not Found
Found
Not Found
Search on
Cell
location
Return "Station not in
Database" and SAD
Entry Form for
Voluntary SAD entry
Found
Return Station
Associated Data
(SAD)
Return via net

FIG 4.

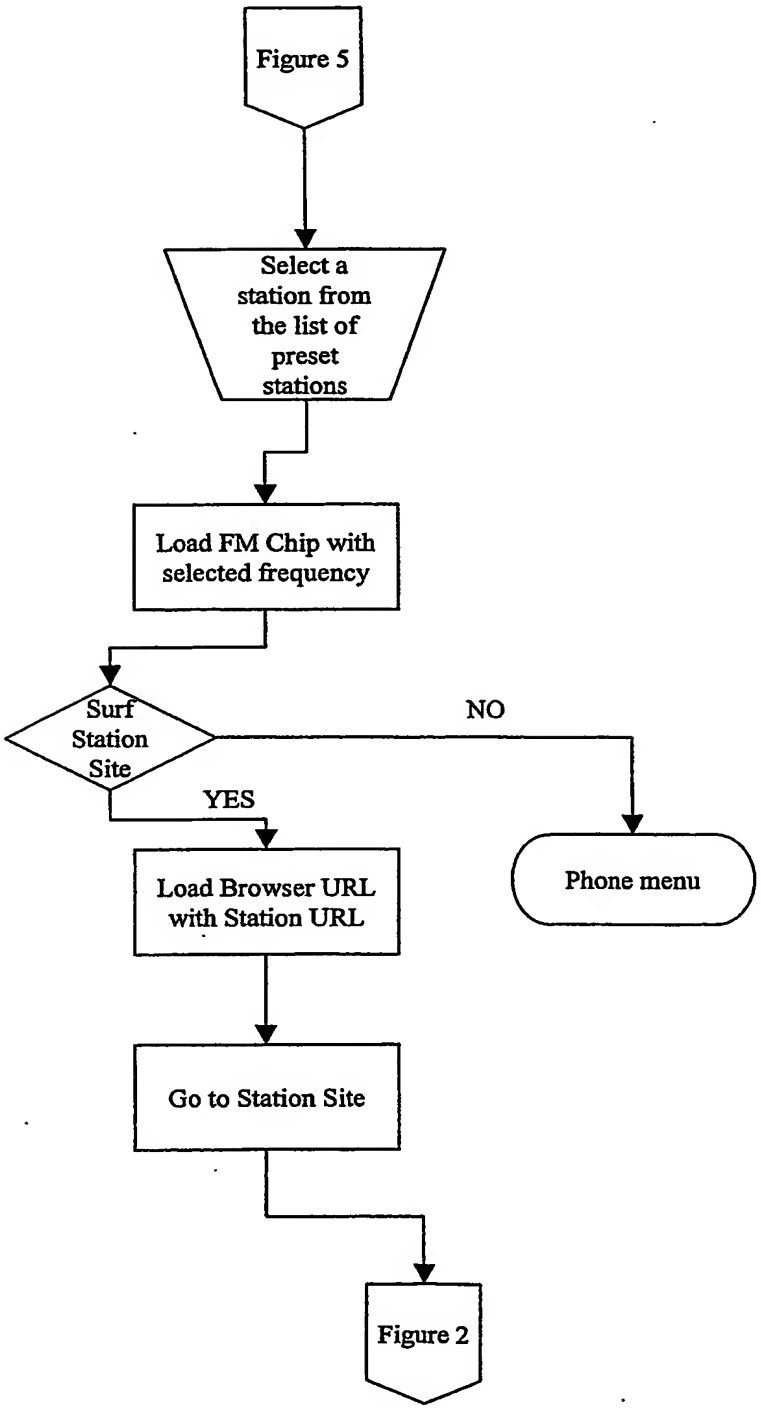
Figure 5
Select a station from the list of preset stations
Load FM Chip with selected frequency
Surf Station Site
NO
YES
Phone menu
Load Browser URL with Station URL
Go to Station Site
Figure 2

FIG 5.

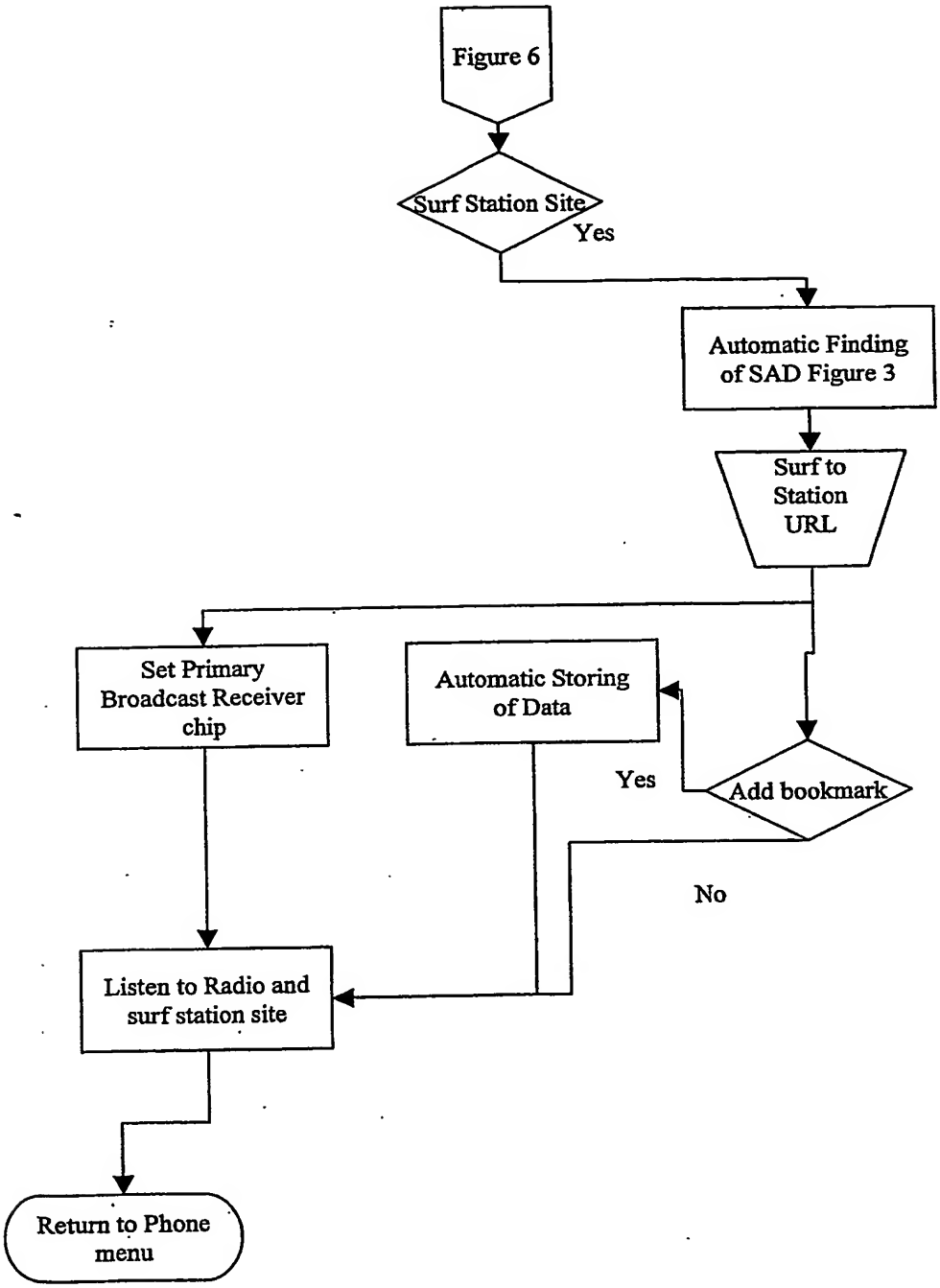
Figure 6
Surf Station Site
Yes
Automatic Finding of SAD Figure 3
Surf to Station URL
Set Primary Broadcast Receiver chip
Automatic Storing of Data
Yes
Add bookmark
No
Listen to Radio and surf station site
Return to Phone menu

FIG 6.